



Research Letter

Thrombus aspiration catheter is a Dottering balloon



A B S T R A C T

Keywords:

ST elevation myocardial infarction (STEMI)
 Percutaneous coronary intervention (PCI)
 Thrombus aspiration

Coronary angiogram in a young man with history of STEMI with delayed presentation revealed subtotal occlusion of left anterior descending artery (LAD) with large thrombotic filling defect distal to the critical lesion. PCI was preferred without delay because of ongoing chest pain. Several runs of thrombus aspiration failed to detect any visible thrombus. However, the immediate angiogram after thrombus aspiration showed complete distal embolization of the thrombus which could have been achieved by Dottering or balloon dilatation. In contrary to the general perception, does thrombus aspiration push more thrombus than it can aspirate?

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Manual thrombus aspiration catheter fails to aspirate any visible thrombus in $\geq 30\%$ of cases.^{1,2} It largely fails to add any clinical benefit most of the time over a period of one-year follow-up.³ There are several explanations like further distal thromboembolism and delayed presentation. A thrombus aspiration catheter (TAC) is 3–4 Fr in external diameter. It has to go distal to thrombus containing ruptured plaque before starting aspiration. Therefore, this relatively large diameter device when crossing thrombus pushes most part of the thrombus distally like a Dottering balloon. When the TAC is pulled out with negative pressure, the larger thrombus caught in the bevel dislodges in larger diameter proximal arteries which flies distally or into side branches. Therefore, a further development in technical design of device is needed like the device used in acute limb ischemia.⁴ In this illustration, we cite such an experience. A 48-year-old male, non-smoker and nondiabetic presented after 36 h of myocardial infarction but continuing decrescendo angina. He had not undergone thrombolysis outside. Coronary angiogram showed subtotal occlusion of left anterior artery 2nd diagonal branch [Fig. 1]. A large size filling defect thrombus was apparent just distal to the site of critical occlusion [Fig. 1]. Out of four different approaches (direct stenting with a longer stent which would cover the tight lesion and would press the thrombus in situ; Dottering followed by stenting; balloon dilatation followed by stenting; and thrombus aspiration) in such a situation, we preferred thrombus

aspiration before stent implantation. A thrombuster catheter (KANEKA MEDIX CORP.) was used. Despite several runs of thrombus aspiration, we could not detect any visible thrombus in the aspirated content. However, the immediate angiogram after thrombus aspiration did not show any evidence of thrombus in LAD. The distal embolization was the only way out. This could have been achieved by Dottering or balloon dilatation, i.e. pushing the thrombus distally which further reduces myocardial blush grade resulting in further worsening of remodeling. On the other hand, it helped us to use a smaller length stent because of the significant reduction of thrombus burden distal to the lesion. In contrary to the general perception, does thrombus aspiration push more thrombus than it can aspirate? In the context, a simile as small song would be amusing:

*What do I answer?
 If myocardium will cry
 Here was thrombus
 Where did it fly?*

The theme of song is beating a tired horse, i.e. adding more thrombotic burden to micro-circulation which would further woos compromised myocardium.

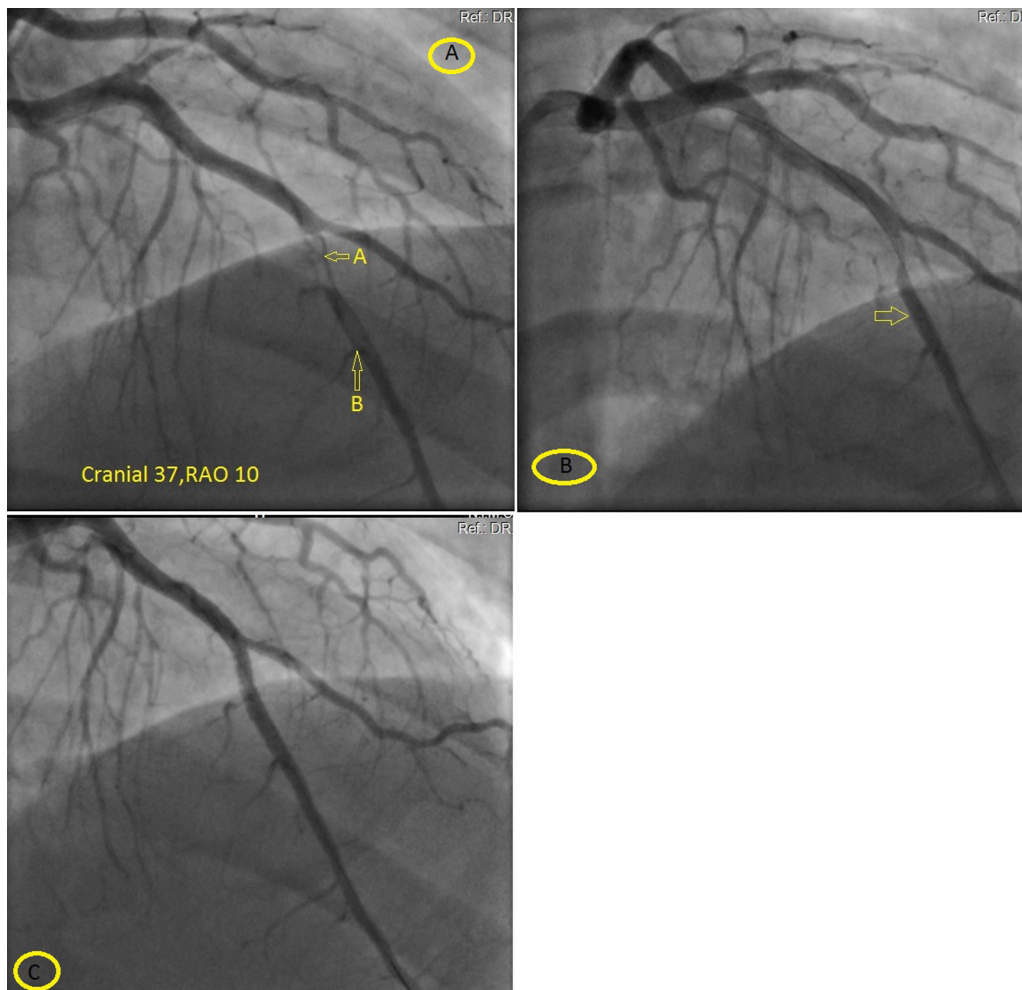


Fig. 1. (A) The critical stenosis (arrow-A) of LAD after second diagonal followed large thrombotic filling defect (arrow-B); (B) the complete disappearance of thrombus though there was no visible thrombus in the aspiration even with magnifying glass; (C) the stenting with a smaller size drug-eluting stent.

Conflicts of interest

The authors have none to declare.

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